of west longitude, which was searched by the U. S. S. *Ranger* in 1881, was not entered by the *Wheeling*. The *Ranger* obtained twenty-nine soundings, ranging in depth from 2,776 to 3,097 fathoms, and the *Wheeling* fifty-nine soundings, ranging in depth from 2,850 to 3,352 fathoms. Numerous specimens collected by both vessels indicated that throughout the combined extent of the searches there is a sameness in the characteristics of the bottom soil.

The accompanying chart of the soundings that were taken demonstrates that there is no submarine mountain culminating near the surface of the sea in this region, and shows with equal force that there never were any rocks here nor any shoal upon which a vessel could have anchored.

This is not a locality in which the floating things of the ocean are apt to collect, and it will perhaps ever remain a mystery as to what misleading appearances of the surface of the sea could have given rise to the reports which caused the representation for fifty years in the charts of all the great maritime nations of a dangerous feature which had no real existence.

GEOGRAPHICAL RECORD.

AMERICA.

Colossal Bridges of Utah.—The natural bridges described and illustrated by Mr. W. W. Dyar in the *Century Magazine* for August are believed to be unequalled by any known in other parts of the world. These bridges are near the head of White Cañon, in San Juan County, Utah. The rare phenomenon is here witnessed of erosive forces so balanced against the varying endurance of natural rock cliffs "as to excavate and undermine and leave intact a span of the firmer rock arching over an eroded softer stratum."

Mr. Dyar says that the walls and buttresses of the bridges are composed of pinkish sandstone, streaked here and there with green and orange-coloured moss or lichens. The Caroline bridge measures about 208½ feet from buttress to buttress across the bottom of the cañon. The centre of the arch is 197 feet above the water flowing beneath it. Above the highest point of the arch rises the solid mass of sandstone 125 feet higher to the level floor of the bridge. The causeway is thus 322 feet above the stream, and the floor of the bridge is 127 feet wide.

A still more remarkable and majestic sight is the Augusta bridge, three and a half miles above the Caroline bridge. Here the cross-section of the cañon is 335 feet 7 inches from wall to wall. The splendid arch is of sandstone, 60 feet thick in the central part, and 40 feet wide. The opening beneath the arch is 357 feet in perpendicular height. Some idea of its magnificent proportions may be gained by a few comparisons.

The bridge is twice as high, and its span is more than three times as great, as that of the famous Natural Bridge of Virginia. The bridge would overspan the Capitol at Washington and clear the top of the dome by 51 feet; and if the loftiest tree in the Calaveras grove of giant sequoias in California stood in the bottom of the cañon its topmost bough would lack 31 feet of reaching the under side of the arch.

The Little bridge, about a mile and a half below the Caroline bridge, is not so large as the other bridges, but is still a remarkably imposing object. These great natural curiosities were discovered by Emory Knowles in the summer of 1895, and seen by Mr. Scorup, a cattleman, in the fall of the same year. The photographs and the notes from which Mr. Dyar wrote his description were made by Mr. Horace J. Long, who, with Mr. Scorup, visited the bridges on March 13, 1903. The region abounds in the remains of cliff dwellers, and is apparently destined to become one of the show places of the country.

THE MOUNTAIN RANGES OF THE GREAT BASIN.—The geologists of the early surveys of the Great Basin reported the existence of fault block mountains so recently upturned that the evidence of the faulting is revealed in the topography, even though the fault-plane itself is hidden from view. Professor Davis has given the subject considerable attention in the past few years, and, as a result of his studies, has issued two or three papers discussing the physiographic evidence of fault origin. His last essay (Bull. Museum Comparative Zoology, XLII, 1903, 129–177) presents a thorough discussion of the topographic features to be expected in an uplifted faulted block in various stages of development. After having constructed a theory based upon this consideration, he describes the topographic characteristics of certain mountains of the Great Basin, which he has studied, and shows how closely they agree with the ideal forms which his theory calls for. By the aid of text, diagrams, and photographs he shows clearly that the phenomena presented by certain of the Great Basin mountains are clearly in accord with

the faulting hypothesis. His paper is an interesting illustration of the value of correct understanding of topography in interpreting geological history. Throughout the paper little use is made of stratigraphy, and no direct evidence of faulting is introduced, excepting that presented by alluvial deposits of recent age, which in some cases have been disturbed by recent movements along the fault-planes. R. S. T.

HANGING VALLEYS OF GEORGETOWN, COLORADO.—The presence of tributary valleys whose rock floors stand well above the level of a main valley bottom has now been recorded in numerous places; for example, Norway, the Alps, the Yosemite, and the Finger Lake region of Central New York. To explain these *hanging valleys* several essays have already been written, and the leading explanations offered have been: (1) down-faulting of the main valley floor, (2) lowering of the main valley floor by rapid river erosion, (3) lowering of the main valley by glacial erosion. The last explanation has recently received considerable attention as a result of the fact that it has been applied by Prof. Davis to the phenomenon as observed in the Alps and the valleys of the Norwegian fjords.

Since each of these three explanations is capable of accounting for the phenomenon of hanging valleys, it is evident that each case must be examined by itself in order to discover its cause. This has been done by Crosby (Technology Quarterly, Vol. XVI, 1903, pp. 41–50) for the very striking cases of hanging valleys near Georgetown, Colorado. That glacial erosion will not account for the facts is proved by the absence of all signs of glaciation in the main valley below the hanging valley. Certain facts of topography are deemed fatal to the theory of stream erosion. This, by elimination, leaves faulting as the only explanation possible; and Crosby shows that the mining operations have revealed an extensive system of faults, along some of which, moreover, there has been comparatively recent movement. His conclusion is, therefore, that the floor of the main valley at Georgetown is a downsunken block so recently lowered that the tributary valleys have been left hanging above it. R. S. T.

MR. ROBERT T. HILL'S WORK IN MEXICO.—This well-known geologist has recently returned from a long trip of exploration in Mexico. He has been studying that country for years with a view to obtaining information concerning its geological evolution and history and the relations with the geographical features of the United States on one side and Central America on the other.

In a paper which he presented to the Eighth International Geographic Congress on "The Physical Geography of Mexico," Mr. Hill showed that the plateau province, which embraces nine-tenths of the Republic and is its chief physical feature, is the southern continuation and end of the great North American Cordilleran system. Its relations, however, are not with the Pacific Mountains or the Rocky Mountain ranges, but it is the southern continuation of the Colorado Plateau, evolved by the folding and faulting of the latter to the southward. In common with the Colorado Plateau, it has been subjected to great uplift and subsidence. Mr. Hill is now writing a book on Mexico, in which he will describe at length the geological, topographical, and climatic features of the country and their relations to the cultural geography of Mexico.

THE NEW MEXICAN PORT OF SALINA CRUZ.—President Diaz, in his Message to the Mexican Congress on April 2 last, spoke at length of the various public works in progress. The largest of these numerous enterprises is the creation of the port of Salina Cruz, on the Pacific side of the Isthmus of Tehuantepec. Three thousand workmen are employed there, and the improvement is now far advanced.

Salina Cruz has been nothing more than a dangerous roadstead, exposed to all the sea storms. The town was merely a miserable village of a tribe of Indians, who have now been removed a little into the interior. The building of a safe harbour has been a work of much difficulty. The harbour is formed by a breakwater 3,300 feet in length, built of great blocks of cement. Within the breakwater spacious docks are being constructed. The sea-floor of the harbour is being dredged so that the basin will accommodate the largest shipping, and a dry dock is being built in which two large vessels may be placed at once. It is expected that within about a year Salina Cruz will be transformed into a safe and, in all respects, an excellent port.

The Atlantic port of Coatzacoalcos, on the north side of the isthmus, was far less difficult to construct. The business part of this harbour will be chiefly along the Coatzacoalcos River, which is navigable for several miles from the sea, and is adapted for large wharfage accommodations. The depth of water alongside the wharves will be 35 feet at low tide.

Between these two ports the railroad, 192 miles across the isthmus, has been entirely rebuilt, and the completed track and bed are said to be in perfect condition. Mexico hopes to attract a large amount of world-trade across the isthmus upon completion

of these two ports. Arrangements are already far advanced for making the Isthmus of Tehuantepec the focus of important railroad lines.

BURIED ICE-SHEETS IN THE TUNDRA.—Many travellers have described the occurrence of sheets of clear ice in the alluvial deposits of Arctic America. In a recent number of the *Journal of Geology* (Vol. XII, 1904, pp. 232–236) Tyrrell describes these under the name *crystosphene*, giving numerous instances observed in the Yukon Territory, and discussing their origin. He states that, though the ground is permanently frozen to depths varying from 40 to 200 feet, there are, here and there, unfrozen channels through which springs rise, flowing without interruption throughout the year. These springs may be unnoticed in summer, but in winter, when the temperature may fall as low as—60° F., the spring water freezes around the spring, causing such a marked accumulation of ice that the name "glacier" is locally applied. In explanation of the crystosphenes, Tyrrell proposes the theory that they are related to this spring action when the spring water is prevented from rising to the surface. He states that the clear ice layers are more or less horizontal sheets of from six inches to three feet or more in thickness, lying between layers of muck and fine alluvium, usually where there are associated layers of silt or sand. Most of them are from two to four feet below the surface, and approximate closely to the slope of the surface under which they lie. The exact manner in which the spring water forms the crystosphenes is outlined as follows: The water of a spring of moderate volume, rising toward the surface, reaches a level near the surface where it freezes in winter, and continues to form downward as the winter cold increases. Reaching a plane of weakness, such as occur in horizontal beds, the water is forced along it, and, freezing, forms a horizontal bed whose thickness and areal extent will depend upon surroundings. The covering of moss or muck, being an excellent non-conductor, protects the crystosphene from melting in summer, and thus there is developed a permanent underground ice-sheet. R. S. T.

EUROPE.

REFORESTATION IN ICELAND.—Prof. C. V. Prytz, of Copenhagen, has recently visited Iceland to study the prospects of inducing a larger amount of tree growth there. His conclusions are summarized in *Globus* (No. 16, April, 1904). He says that a considerable part of the surface of Iceland was once covered with trees, which were finally killed out by reckless cutting and the browsing

of cattle and sheep on the very young timber. The result is that the fertile humus that had formed on tree-covered areas has disappeared, leaving only a stony surface. Woods, however, containing trees of considerable size still exist in various parts of the island, and the climatic conditions are not unfavourable to tree growth. Reforestation would not only supply the great desideratum of firewood, but would also help to protect the surface soil, and thus help to increase the adaptability of land for cultivation. Firs, pines, and birches would thrive in many situations, and Prof. Prytz thinks the experiment would be very successful. He recommends that trees be planted near the farms, where they may be protected from cattle, and that plantations be started on the slopes of the mountains.

Winning Land from the North Sea.—The Germans are now building a dam nearly three miles long to connect the Island of Nordstrand, west of the town of Husum, in Schleswig-Holstein, with the mainland. The top of this dam, which will be used as a highway, will be about two feet above high tide. The effect of the dam and of others already built or building between various islands and the mainland, further north, will be to prevent the rush of ebb and flow tide along the coast and the destruction caused by storm waves, sediment will be deposited in the comparatively quiet waters, and gradually new land will be formed between the islands and the coast. This great work of improvement is being carried out by the Prussian Government. It is expected that the protection of the coast thus secured will have the double advantage of keeping the sea from eating further into the mainland and of adding new areas of land to cultivation.

Sunshine and Influenza.—Recent studies of the duration of bright sunshine in Nuremberg, in relation to the number of cases of influenza there recorded, show that the disease is most common, not when there is the least amount of sunshine, as has been stated to be the rule in other places, but when there is a maximum of sunshine. Further, a long period of cloudy weather in Nuremberg is not, so far as these same observations go, accompanied by an excess of influenza. It is to be noted that the observations referred to and discussed in *Das Wetter* for April, 1904, cover a comparative short period (1898–1903), and, therefore, must not be taken as giving a definite answer to the question, especially as other factors, such as rainfall, humidity, wind, temperature, etc., as well as controls other than meteorological, doubtless play a part in the matter.

R. DeC. W.

CLIMATIC INFLUENCE ON VINEYARDS.—The disappearance of vineyards from southern England, where grapes used to be grown, has led to a belief in a change of climate in that region. In the *Quarterly Journal of the Royal Meteorological Society* for April, 1904, Mr. Richard Strachan has collected the data concerning the location and extent of the vineyards which were recorded at the time of William the Conqueror. These vineyards were maintained for about twelve centuries, but later the vine ceased to flourish there. Mr. Strachan believes it not improbable that a change of climate had something to do with these changes, the vineyard period having been marked by warm and sunny summers. It should be remembered in this connection that while many reasons have been brought up by various writers for believing in changes of climate, other writers have brought up other reasons, just as good, for believing that there has been no change. An examination of the records of temperature and of rainfall from the time at which such records were first kept brings to light no evidence of a progressive change in the temperature of the air, or in the amount of rainfall. In France, Angot has made a very careful study of the dates of the vintage since the fourteenth century, and finds no evidence of a progressive change in the climate. It is unsafe to argue in favour of climatic change on the basis of such data as those collected by Mr. Strachan. The simple fact that grapes could be grown more profitably on the Continent would be a sufficient reason for the abandonment of the English vineyards. R. DEC. W.

AFRICA.

RAILROAD DEVELOPMENT IN AFRICA.—Five years ago there were less than 9,000 miles of completed railroad in Africa; to-day there are 13,000 miles. Very little of this railroad development in the past few years has been in civilized lands, like Algeria and Tunis, Egypt, Cape Colony, and Natal, which are fairly well supplied; but the tracks have been extending through the jungles, forests, and deserts of the tropical colonies. In 1899 the length of these colonial railroads was only 1,226 miles; to-day there are 4,475 miles of colonial railroads in operation, and thousands of native labourers are at work on over 1,700 miles, which will probably be added to the completed mileage within another year. The prospects are that within the next six years there will be 25,000 miles of railroads in Africa.

Not only in railroad-building, but also in all other industrial enterprises throughout Africa, the barbarous native is the instru-

ment employed under white guidance in the colossal task of development. On the whole he is doing his part well.

All sorts of gauges are being used in building these railroads, and most of them are narrow gauge. This is not the case, however, in South Africa. The Beira Railroad, when first built, was narrow gauge; but it was converted later to standard gauge, to conform with the Cape roads, and there is now a uniformity of gauge throughout South Africa.

The following table gives a summary to this time of the colonial railroads that have been built and those that are now in course of construction:

	BUILT. MILES.	BUILDING. MILES.
GERMAN COLONIES.		
Tanga-Mombo	80	..
Swakopmund-Windhoek	237	..
Lome-Little Popo	..	26
Total	317	26
FRENCH COLONIES.		
St. Louis-Dakar	164	..
Kayes-Bamako	345	..
Konakry-Kurussa	99	322
Bingerville-Kuadikosi	..	164
Kotonu-Tshauru	55	379
Pahu-Wyda	9	..
Jibutil-Harar	185	..
Brekaville-Tananarivo	116	130
Total	973	995
ENGLISH COLONIES.		
Freetown-Bo	135	..
Sekondi-Kumassi	179	..
Accra-Kpong	..	62
Lagos-Ibadan	125	..
Zungeru-Barijugo	28	..
Menini-Salisbury	170	..
Salisbury-Bulawayo	300	..
Bulawayo-Victoria Falls	278	..
Bulawayo-Gwanda	..	104
Gwelo-Selukwe	..	22
Chiromo-Nyassa	..	186
Mombasa-Victoria Nyanza	584	..
Total	1,799	374

	BUILT. MILES.	BUILDING. MILES.
CONGO FREE STATE.		
Matadi-Leopoldville	250	..
Bomar-Mayumbe	50	19
Stanleyville-Ponthierville	..	42
Total	300	61
PORTUGUESE COLONIES.		
Loanda-Lucalla River	225	..
Benguella-Catumbela	14	..
Beira-Menini	222	..
Total	461	.
ERITREA (ITALIAN).		
Massawa-Guinda	48	..
ANGLO-EGYPTIAN-SUDAN.		
Wadi-Halfa-Khartum	577	..
Berber-Suakin	..	250
Total	577	250
Grand total	4,475	1,706

CLIMBING THE RUWENZORI RANGE.—In a paper on "Western Uganda" (*Geog. Jour.*, Sept., 1904), the Rev. A. B. Fisher, who, with his wife, has ascended to the glaciers of the east side of the Ruwenzori Range, says that during their ascent the thermometer fell between the altitudes of 5,000 and 13,800 feet from 115° to 28° Fahr. He agrees with Sir Harry Johnston that the height of the highest peak is between 20,000 and 22,000 feet. The ascent to the snow-line is arduous, takes five days, and involves considerable danger. The ascent for 8,000 feet is over forest-clad ridges. Ferns of every variety are found, and maidenhair shrubs, enormous lobelias, and orchids are the predominant plants. Above 8,000 feet bird and insect life apparently ceases, and the silence is unbroken, except by the roar of glacier streams. Still higher stretch bamboo forests, terminating in thick morass and swamp that are fed by streams from the precipitous rocks above. The climbing is very steep to the foot of the glaciers. The highest points have not yet been attained, and Mr. Fisher is of the opinion that the range may be more successfully attacked from the western slopes. Thus far the ascents have been made on the eastern side.

SOUTH AFRICAN RAINFALL.—J. R. Sutton, meteorologist of the De Beers Consolidated Mines at Kimberley, has been giving much attention to a study of the climate of South Africa, and before the South African Philosophical Society, at a recent meeting, he read a paper entitled "An Introduction to the Study of South African Rainfall." This paper is the fifth of a series planned some years ago to describe the meteorology of the South African tableland in a form suited to the requirements of the physicist. It gives a history of Kimberley rainfall from 1877 to 1902, and discusses the annual, monthly, daily, and hourly values. The maximum known annual fall at Kimberley was 34.25 ins., in 1891; and the minimum was 8.75 ins., in 1897. This range is less than that of places similarly situated in Australia and India, but greater than that of South America. The wettest time of the year is the last week of February, and the driest is the first week of August. The position of Kimberley in the general scheme of South African rainfall is considered by comparing the rainfall of 160 stations in the country having records of 15 to 20 years or so. Monthly and annual averages are determined for these, both for the separate stations and also for the various areas into which the Meteorological Commission has divided South Africa. Rain on the central tableland comes chiefly with a northeast wind and a falling barometer; on the coast of Natal with a southwest wind and a rising barometer. In this and other respects there is scarcely any special agreement between the rain conditions of the two areas. The author's conclusion is that the rain of central South Africa originates in the main in the doldrums, being reinforced more or less by the moisture evaporated from the Indian Ocean; and that the aridity of the west coast is not caused, as Buchan asserts, by the southern anticyclonic belt, but simply by the coldness of the water.

R. DEC. W.

TRANSVAAL METEOROLOGICAL SERVICE.—Considerable interest attaches to the work of the new Meteorological Service of the Transvaal, of which the director, Mr. R. T. A. Innes, contributes an account to *Symons's Meteorological Magazine* for May, 1904. The Transvaal Government decided to establish a Meteorological Department in November, 1902, and the director entered upon his duties in April, 1903. A site for a central observatory was secured on a range of hills three miles northeast of Johannesburg, the ground being partly purchased, but more largely presented, by a Dutch family—the Bezuidenhouts. The observatory is now built, and stands about 5,900 feet above sea-level. There are now in opera-

tion 200 rainfall stations, and about 30 second and third order stations. The observers are all voluntary, many of them being farmers and school teachers. Some twenty-five of the observers send daily weather telegrams to headquarters. Daily telegrams are also exchanged with Cape Town, Durban, Bloemfontein, and Salisbury, and on the basis of these telegrams a weather report is issued every day at noon. It was hoped that a set of self-recording instruments would be in working order at the central observatory by July 1st of this year. R. DEC. W.

ASIA.

TOPOGRAPHICAL SURVEYS OF CEYLON.—The report of the Surveyor-General of Ceylon for 1902 has a map showing that the topographical survey of the island is drawing to a close, the whole of the north, north-central, and east parts of the island having been surveyed and mapped since 1897. The work of 1902 filled in all the larger gaps. Fifteen thousand square miles have been mapped, on a scale of one inch to a mile, and about 2,000 on a scale of ten inches to a mile. The ten inches to the mile sheets show all forests, fields, gardens, etc. Up to the present time all maps of Ceylon have been very inaccurate, but the completion of the survey will make adequate maps possible.

POLYNESIA AND AUSTRALIA.

MARCUS ISLAND.—This speck of land has recently come into the possession of the United States, though until lately its exact position, and even its existence, were in doubt. It was marked with an interrogation point in *Stieler's Hand Atlas* in 1896, but receives an assured position in the edition of 1904.

A few years ago an American guano company began operations at the island, with the result that the United States and Japan became involved in a dispute as to its ownership. The dispute was settled in favour of our country.

One of the company's ships, in 1902, took out a scientific man from the Bishop Museum, Honolulu, to observe the geology, zoology, and botany of this hitherto unexplored spot. This gentleman, Mr. W. A. Bryan, was able to spend only a week on the island, but this was long enough to gain a general idea of its geographical history and surface features. His report has been printed in the "Occasional Papers" of the Museum.

The centre of the island is in 24° 14′ N., 154° E. Guam, about 1,000 miles to the southwest, is the nearest American land to it.

Though its position was ascertained during the voyage of the *Tuscarora* in 1874, it has often been confused with other rocks or islets in this part of the Pacific. It is still uncertain what other bits of land may exist in its neighbourhood, but from the flight of birds Mr. Bryan inferred that land would be found from 50 to 75 miles northeast of Marcus.

The island is roughly triangular in shape, its longest side measuring less than two miles. The highest points are near the angles, and the maximum elevation of 75 feet is near the north end. The island is an ancient atoll that has since been elevated so that the the bottom of its lagoon is now above the level of the sea. The shores are formed of coral sands and shingle, with huge blocks of coral rock, many of them at a considerable elevation above the sea. The interior surface consists partly of similar materials and partly of sand, more or less mixed with humus. Most of the island is thickly wooded. Storms have also helped to build up the island. Some sea or shore birds are abundant, but any terrestrial or arboreal birds that might have been accidentally introduced would have perished for want of suitable food.

GLACIATION OF TASMANIA.—That local valley glaciers formerly existed in the mountains of Tasmania, where none now exist, has been fairly well established by previous workers; and the existence of glaciation during the Carboniferous Period rests upon evidence that seems difficult to deny. But the report that glacial deposits occur at a distance from the mountains, indicating extensive Pleistocene glaciations, has been denied by later workers whose knowledge of glacial deposits gives great weight to their opinions. Recently Prof. J. W. Gregory (*Quart. Jour. Geol. Soc.*, LX, 1904, 37–53) has published a paper reviewing the literature relative to the glaciation of Tasmania and adding a description of his own observations on the subject. He finds boulder clay, scratched stones, transported boulders, moraines, and other glacial deposits, proving conclusively that glaciers had reached well beyond the mountains and to levels of 400 feet above present sea-level. The condition of preservation of the glacial forms, and the freshness of the boulders and clays, indicate recent origin; in fact, Gregory says from their appearance they might be as recent as some of the later moraines of the North of England. This paper of Gregory's is of especial importance because of the fact that the conditions of glaciation in the southern hemisphere are only obscurely understood. R. S. T.

POLAR.

SUMMING UP THE WORK OF THE BRITISH ANTARCTIC EXPEDITION.—The sledge expeditions of the *Discovery* party, during their second summer at Victoria Land, made a large addition to geographical knowledge. They confirmed the conclusion previously reached that the whole of the great journey made to the farthest south by Capt. Scott, in the previous year, was on sea ice (BULLETIN, May, 1904, p. 295).

The summit of the interior of Victoria Land was shown to be a great plain, reaching a height of nearly 9,000 feet. Capt. Scott is of the opinion (*Geog. Jour.*, July, 1904) that although the differences in level are slight, yet the ground is lower to the north and higher to the south, reckoning from the latitude in which the exploration was carried on—viz., 77° 59′ S. Lat.

The wind over the interior seems to be continuously westward. In winter it blows apparently with great violence from the west-south-west; while in summer it gradually shifts to southwest and south. The only snowfall of the year occurs during this period, and it seems to be extremely small.

In the great plain are slight undulations, which can only be detected by differences of shade in the snow or by a levelled theodolite. The greatest difference in level seems to be only from 50 to 60 feet, and this inclination is spread from two to three miles, so that it cannot be detected under foot.

The coast-line of Victoria Land is broken up by large fiords, which have been carefully mapped. The explorations of this expedition extended east and west over about one-sixth of the circumference of the Antarctic region in Lat. 78° S. The farthest reached to the east was off King Edward VII. Land in Long. 152° 30′ W.; while the farthest point to the west was Long. 146° 30′ E., attained by Capt. Scott and his party on their great journey.

THE COLDEST REGION OF THE EARTH.—The district around the Siberian town of Verkhoyansk, with a record of low temperature of −69.8 F., has long been regarded as the coldest region of the earth. According to the reports of the Russian Arctic painter Borissoff, some parts of Novaya Zemlia are subject to at least an equal degree of winter cold, and this region has recently been regarded as a second pole of greatest cold. During his latest visit to Novaya Zemlia he found near Matochkin-Shar, which separates the two large islands, a box containing a maximum and a minimum thermometer. The instruments were of Austrian manu-

facture, and were probably the property of the geologist Hofer, who visited that region in 1872. According to the readings of these instruments, the greatest warmth was 15° above and the greatest cold 70° F. below zero. The winter cold of Verkhoyansk appears thus to have been surpassed by that of the middle part of Novaya Zemlia (*Mitt. der Kais. Königl. Geog. Gesell. in Wien*, Vol. XLVII, Nos. 5 and 6).

ANTARCTIC METEOROLOGY.—In the *Scottish Geographical Magazine* (Vol. XX, 1904, pp. 113–120), R. C. Mossman, the meteorologist of the *Scotia* expedition, has recently published a summary of the results obtained during the voyage. The observations made by the *Scotia* expedition gain greatly in value from the fact that they may be compared with those of the Swedish expedition. It may also be recalled that the *Scotia's* station on the South Orkneys is to be continued by the Argentine Government, so that the preliminary observations made during the expedition itself will really form part of what is likely to be a long series. Mr. Mossman's account gives an abstract of the hourly meteorological observations made in Weddell Sea and at Scotia Bay, Laurie Island, South Orkneys, from February to October, 1903, and also gives some comparison with the observations made by Ross in approximately the same region at the same season in 1843. During the period of observation in the South Orkneys the coldest day (September 2) had a mean of −21.8°. The variability of the temperature was notable, the range on many days exceeding 50°, and on a few occasions 60°, the variations being due to the passage of rapidly-moving depressions, with sudden changes of wind from northwest to southwest. Foehn winds were recorded on several occasions, the winds being west-northwest, and the temperatures rising to 46.8° on one occasion. The wind from this direction had to pass over a considerable extent of high land before leaving Scotia Bay, and this gave opportunity for adiabatic warming during its descent. Winds from the northwest were most frequent (*i. e.*, the prevailing westerlies). Easterly winds were very rare, but in summer they are probably more frequent. In 1872, Neumayer put the limit of the "brave west winds" at about Lat. 62° S., and the results from the South Orkneys, situated a degree farther north, agree with this view. R. DEC. W.

GENERAL.

THE POPULATION OF THE WORLD.—In No. XII of "Die Bevölkerung der Erde" (Ergänzungsheft No. 146 to *Pet. Mitt.*), Dr. Supan

gives the results of the latest censuses and estimates concerning the population of America, Africa, and the Polar lands, the changes of figures in parts of Europe that have affected the European total, together with the latest results in Asia, Australia, and New Zealand. He then sums up his estimates of the population of the world in the following table:

	Total Population.	Per Square Mile.
Europe	392,264,000	104
Asia	819,556,000	46.6
Africa	140,700,000	13
Australia and Polynesia	6,483,000	2
North America	105,714,000	13
South America	38,482,000	5
Polar Lands	91,000	—
Total	1,503,300,000*	30.6

Helps in the Study of Anthropogeography.—Among the most recent contributions of Dr. Ernst Friedrich, of Leipzig, to the study of man in his geographical relations are two that will be welcomed as facilitating the labours of students in this field. One of them is "Die Fortschritte der Anthropogeographie" (1891–1902), which is printed in the *Geographisches Jahrbuch* (Vol. XXVI) for 1903. In 37 pages Dr. Friedrich presents practically an exhaustive list of the literary production in this department of geography for the twelve years ending with 1902, giving with nearly every title a little explanatory or critical comment. A large part of the value of such a compilation lies in the division of the matter into groups and under the groups into topics, so that the student may find the literature dealing with just the phases of anthropogeography which he has under consideration. There is nothing lacking in the scientific arrangement of the literature which Dr. Friedrich records. His citations are not confined merely to entire works, but parts of works dealing with particular phases of the subject are referred to under the proper classification. The author divides his material into six main groups with a considerable number of subdivisions under each head. The groups are: I—Allgemeine Werke und Arbeiten; II—Der Boden (das Land) und der Mensch; III—Das Wasser und der Mensch; IV—Die Lufthülle und der Mensch; V—Pflanzen und Tiere und der Mensch; VI—Der Mensch und die Natur. The work is the most

* So printed in the Ergänzungsheft, but the correct addition is 1,503,290,000.

complete index that has yet appeared to the literature relating to this comparatively new branch of geographical study.

The latest monograph from the pen of Dr. Friedrich is "Die Entwickelung des Pflanzenbaues," one of the twenty-six papers prepared by old pupils of the late Friedrich Ratzel in honour of his sixtieth birthday. The paper is especially rich in facts drawn from all ages and all countries illustrating the development and progress of plant cultivation.

BIBLIOTHECA GEOGRAPHICA FOR 1900.—This is the ninth volume of a very useful annual. The volumes have presented classified lists of the world's geographical literature from 1891 to 1900, inclusive, and the ninth volume thus completes the first decade of the most comprehensive geographical index published. The plan of the book was so well laid out in the beginning that it has not been changed in any respect, but the volume has grown in pages every year. The present volume has 510 pages, of which about 15 are given to the United States and Alaska.

PERSONAL.

Prof. J. W. Gregory, the explorer of Mount Kenia, Africa, and for several years Professor of Geology in the University of Melbourne, has returned to Great Britain, to fill the same Chair in the University of Glasgow.

Dr. Julius Hann, Professor of Meteorology at the University of Vienna, has been elected an honorary member of the Russian Geographical Society.

Dr. F. J. H. Merrill has retired from the position of State Geologist of New York, and has opened an office in New York City for the practice of economic geology. Dr. John M. Clarke has succeeded Dr. Merrill at Albany.

Captain R. F. Scott, Leader of the British National Antarctic Expedition, has received the award of the Elisha Kent Kane Medal of the Geographical Society of Philadelphia.